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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/336,687	06/21/1999	KEN'ETSU YOKOGAWA	500.37328X00	7949

20457 7590 09/11/2002

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EXAMINER
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ALEJANDRO MULERO, LUZ L

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 09/11/2002

18

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Offic Action Summary</b>	Application No.	Applicant(s)
	09/336,687	YOKOGAWA ET AL.
	Examiner	Art Unit
	Luz L. Alejandro	1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 11 July 2002.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-12, 14-34 and 36-66 is/are pending in the application.  
 4a) Of the above claim(s) 30, 37-49 and 54 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-12, 14-29, 31-34, 36, 50-53 and 55-66 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
 If approved, corrected drawings are required in reply to this Office action.  
 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
 \* See the attached detailed Office action for a list of the certified copies not received.  
 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
 a) The translation of the foreign language provisional application has been received.  
 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                          | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>15</u> . | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Specification***

The disclosure is objected to because of the following informalities: at page 14-line 22, it is unclear how there can be a width of 0 mm.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 66 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 66 is dependent on itself. Clarification is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8, 10-12, 14-29, 31-34, 36, 50-53, and 55-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokogawa et al., JP 9-321031 (machine translation) in view of Collins et al., U.S. Patent 6,068,784 and further in view of Kaji et al., EP 0793254 A2.

Yokogawa et al. shows the invention substantially as claimed including a plasma processing system for use with a surface processing apparatus in which a vacuum chamber 101 includes a vacuum generating means (see fig. 1 and paragraph 0017); source material gas supply means 116 having the claimed characteristics of claim 12; sample setting means 111; high-frequency power applying means; the source material is transformed into plasma to achieve surface processing of the sample 110; means for generating the plasma including electromagnetic wave supply means 104; magnetic field generating means 102; means 112 for making radicals incident to a surface of the sample; and means for reducing variation in time of the radicals incident to the sample; wherein the apparatus introduces an electromagnetic field from a planar plate 107, the planar plate being disposed in parallel with the sample into the vacuum chamber (see

fig. 1), and is set to be separated from the sample by the claimed distance (see paragraph 0021).

Yokogawa et al. does not expressly disclose a main control means, but Collins et al. does disclose an apparatus in which a controller 86 is used to automate the plasma apparatus. In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Yokogawa et al. so as to further comprise the control system of Collins et al. because this allows for precise control of the desired apparatus and/or process parameters.

Yokogawa et al. and Collins et al. do not expressly disclose the claimed ring-shaped member that has electrical power supplied thereto. Kaji et al. discloses a ring-shaped member 37A through which high frequency power is supplied through a high frequency power source 17A (see fig. 14 and page 15-line 9 to page 16-line 11). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Yokogawa et al. modified by Collins et al. so as to include the ring-shaped member of Kaji et al. because this allows for an increased plasma density (see page 15, lines 16-27) which provides better process results within the apparatus.

With respect to the diameter of the parallel plate, the Yokogawa et al. reference at paragraph 0017, discloses that it varies depending on the resonance mode of the electromagnetic wave. Also, in paragraph 0017, the reference discloses that the electromagnetic wave to generate the plasma has a frequency ranging from 300-500 MHz and that the electromagnetic field that is generated satisfies the ECR condition, the

use of means 116 for generating electromagnetic wave of 300 kHz frequency onto the parallel plate, the use of means 114 for controlling the temperature of the parallel plate, and the claimed surface material of the parallel plate of claims 10 and 26-27. With respect to claim 22, the limitations are disclosed in figure 2 and its description. With respect to the electromagnetic wave characteristics of claims 21 and 32, it would have been obvious to one of ordinary skill in the art at the time the invention was made that such characteristics can be achieved by controlling the parameters governing the electromagnetic wave and the ECR conditions.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokogawa et al., JP 9-321031 (machine translation) in view of Collins et al., U.S. Patent 6,068,784 and further in view of Kaji et al., EP 0793254 A2 as applied to claims 1-8, 10-12, 14-29, 31-34, 36, 50-53, and 55-66 above, and further in view of Gupta et al., U.S. Patent 5,902,494.

Yokogawa et al., Collins et al., and Kaji et al. are applied as above but fail to expressly disclose a planar plate including a plurality of holes through which the material gas is supplied. Gupta et al. discloses a plasma apparatus in which the planar plate 11, to which mixed frequency can be supplied, is a gas manifold through which the gas is introduced to the processing chamber (see figure 1 and col. 4-lines 29-34). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Yokogawa et al. modified by Collins et al. and Kaji et al. by introducing the gas material through holes in the planar

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plates as disclosed by Gupta et al. because such a gas inlet configuration is well known and used in the art and suitable for the intended purpose of uniformly dispersing the gas material to the chamber.

***Response to Arguments***

Applicant's arguments with respect to claims 1-12, 14-29, 31-34, 36, 50-53, and 55-66 have been considered but are moot in view of the new ground(s) of rejection. Additionally, regarding applicant's arguments that the claimed distance between the sample and the plate is not shown in the reference, a *prima facie* case of obviousness is established because the distance in Yokogawa et al., JP 09-321031 overlaps the distance claimed by applicant (see MPEP 2144.05). Furthermore, concerning applicant's contention that the Gupta reference is only for CVD and therefore cannot be combined with the Yokogawa et al. reference which is for etching, applicant is directed to col. 1-lines 20-27 of Gupta which state that the Gupta reference is applicable to a variety of processes including etching.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 305-4545. The examiner can normally be reached on Monday-Thursday from 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills, can be reached on 308-1633. The fax phone numbers for the

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organization where this application or proceeding is assigned are 872-9310 for regular communications and 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0661.



Luz L. Alejandro  
Patent Examiner  
Art Unit 1763

September 8, 2002